

FIG. 1

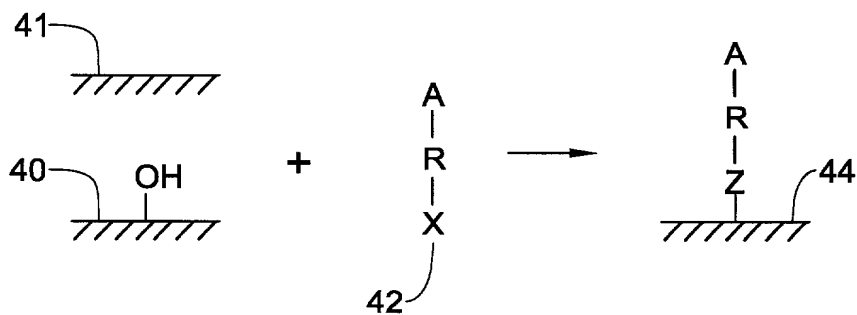


FIG. 2A

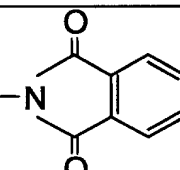
Substrate	Coupling Agent (X=silane or thiol)	Template Layer (Z=siloxane or metal sulfide)
$\begin{array}{c} \text{OH} \\ \\ \text{---} \\ \text{MO}_x \\ \text{M= Si, Ti, In, Fe, ...} \end{array}$ <p>40</p>	$\begin{array}{c} \text{A} \\ \\ \text{R} \\ \\ \text{SiY}_3 \end{array}$ <p>A= NH₂ or  R= alkyl or phenyl Y= halogen or alkoxy</p> <p>42</p>	$\begin{array}{c} \text{H}_2\text{N} \\ \\ (\text{CH}_2)_{n=2-6} \\ \\ \text{Si} \\ \\ \text{O} \\ \\ \text{---} \end{array}$ <p>44</p> $\begin{array}{c} \text{NH}_2 \\ \\ \text{---} \\ \\ \text{Si} \\ \\ \text{O} \\ \\ \text{---} \end{array}$ <p>n=1-4</p>
$\begin{array}{c} \text{---} \\ \text{M or MM}' \\ \text{M= Au, Pt, Cu, ...} \\ \text{MM}'= \text{GaAs, CdSe, ...} \end{array}$ <p>41</p>	$\begin{array}{c} \text{NH}_2 \\ \\ \text{R} \\ \\ \text{SH} \end{array}$ <p>or</p> $\begin{array}{c} \text{NH}_2 \quad \text{NH}_2 \\ \quad \\ \text{R} \quad \text{R} \\ \quad \\ \text{S} \quad \text{---} \quad \text{S} \\ \text{R= alkyl or phenyl} \end{array}$ <p>42</p>	$\begin{array}{c} \text{NH}_2 \\ \\ (\text{CH}_2)_{n=2-6} \\ \\ \text{S} \\ \\ \text{---} \end{array}$ <p>44</p> $\begin{array}{c} \text{NH}_2 \\ \\ \text{---} \\ \\ \text{S} \\ \\ \text{---} \end{array}$ <p>n=1-4</p>

FIG. 2B

Substrate	Coupling Agent (X= OH, CO ₂ H, PO ₃ H ₂)	Template Layer (Z= alkoxy silane, phosphate or carboxylate)
$\begin{array}{c} \text{Cl} \\ \\ \text{---} \\ \text{Si} \\ \\ \text{O} \end{array}$ <p>40</p>	$\begin{array}{c} \text{HO} - \text{R} - \text{NH}_2 \\ \text{R= alkyl or phenyl} \end{array}$ <p>42</p>	$\begin{array}{c} \text{H}_2\text{N} \\ \\ (\text{CH}_2)_{n=2-6} \\ \\ \text{O} \\ \\ \text{Si} \\ \\ \text{O} \end{array}$ <p>44</p> $\begin{array}{c} \text{NH}_2 \\ \\ \text{---} \\ \\ \text{O} \\ \\ \text{Si} \\ \\ \text{O} \end{array}$ <p>n=1-4</p>
$\begin{array}{c} \text{---} \\ \text{II-IV} \\ \text{---} \\ \text{III-V} \end{array}$ <p>41</p>	$\begin{array}{c} \text{HOOC} - \text{R} - \text{NH}_2 \\ (\text{HO})_2\text{OP} - \text{R} - \text{NH}_2 \\ \text{R= alkyl or phenyl} \end{array}$ <p>42</p>	$\begin{array}{c} \text{NH}_2 \\ \\ (\text{CH}_2)_{n=2-6} \\ \\ \text{O} \\ \\ \text{CdSe} \end{array}$ <p>44</p> $\begin{array}{c} \text{NH}_2 \\ \\ \text{---} \\ \\ \text{O} \\ \\ \text{P} \\ \\ \text{O} \end{array}$ <p>n=1-4 InAs</p>

FIG. 2B CONT

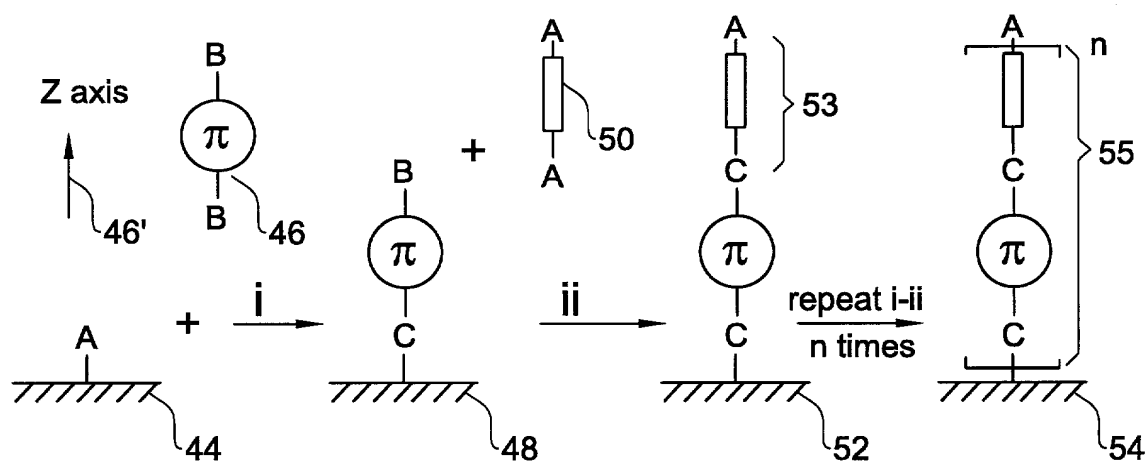


FIG. 3A

A	B	C	INS./SC	COND./SC	
$-\text{NH}_2$					INS/COND
			$-(\text{CH}_2)_n-$ $n=1-12$		oligothiophene
$-\text{NH}_2$					oligoaniline
$-\text{SiCl}_3$	$-\text{OH}$				SC/SC
	$-\text{OH}$		naphtalene perylene terylene anthracene pentacene	porphyrine phthalocyanine	

FIG. 3B

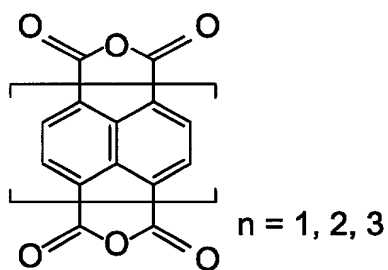


FIG. 4A

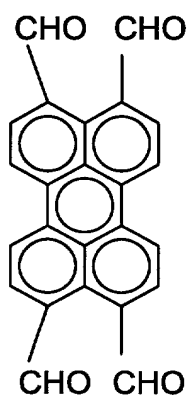


FIG. 4B

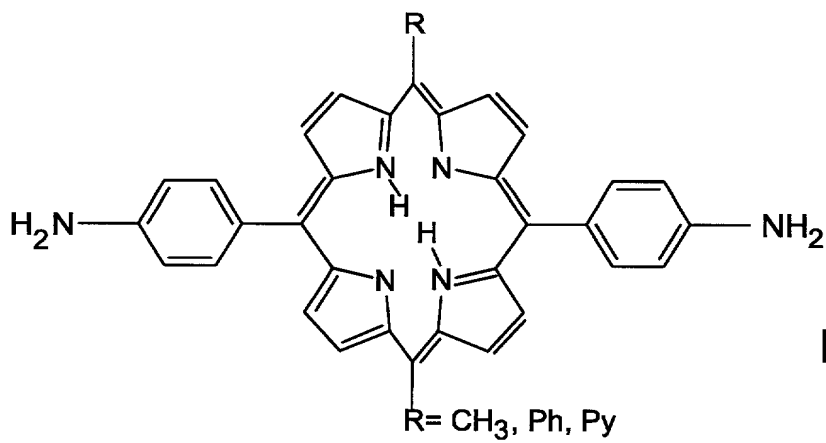


FIG. 4C

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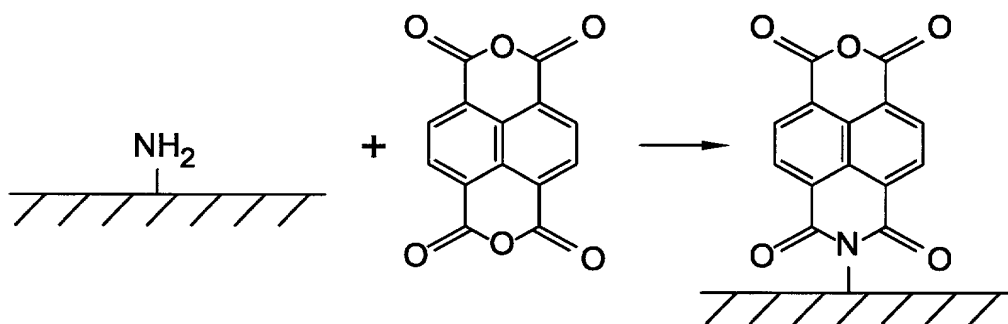


FIG. 5A

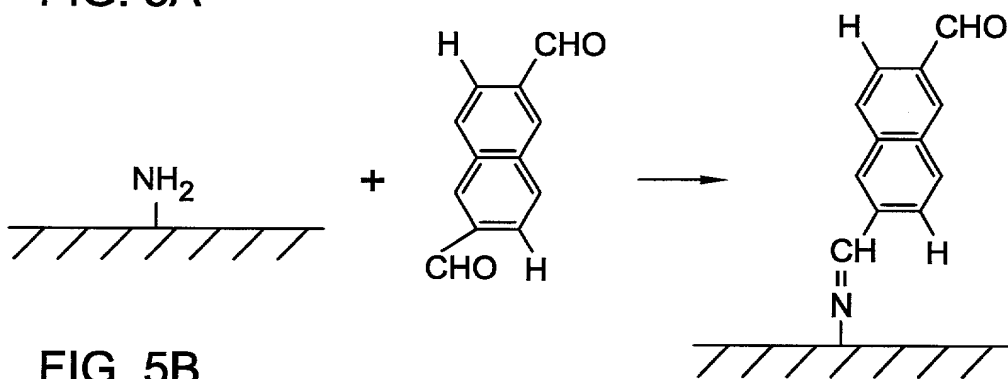


FIG. 5B

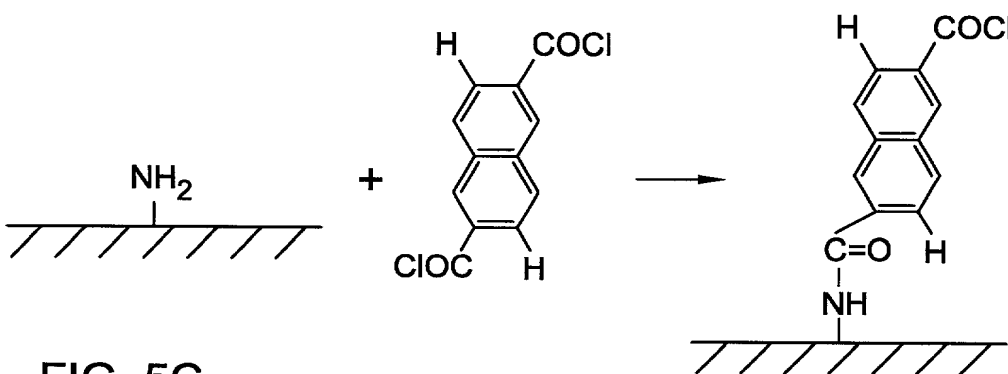


FIG. 5C

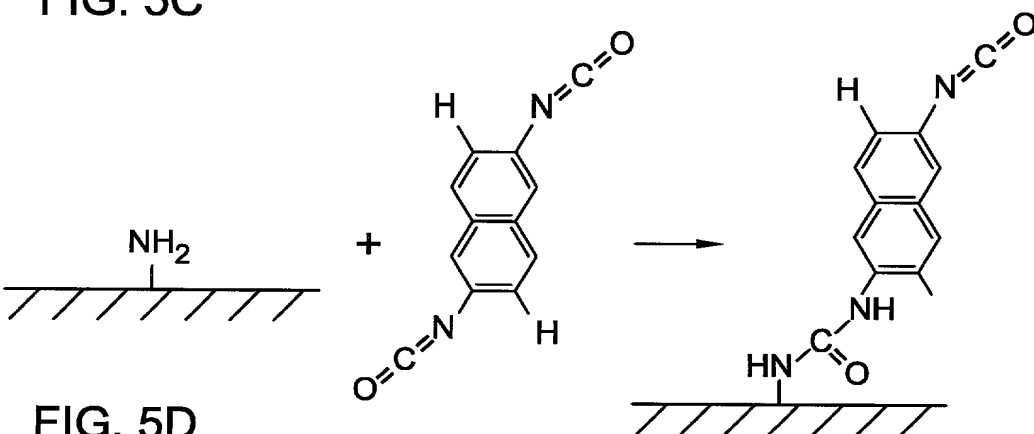


FIG. 5D

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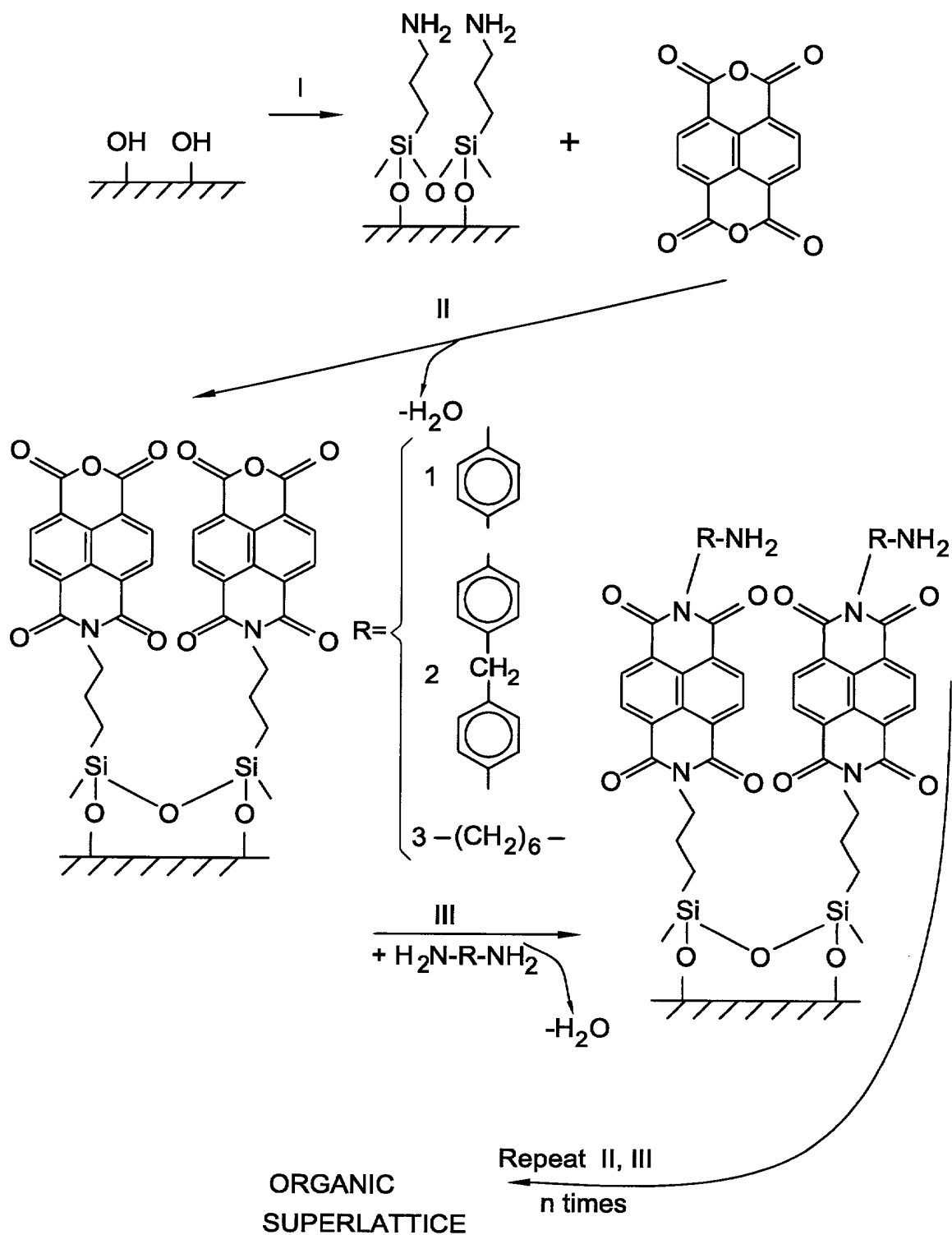


FIG. 6

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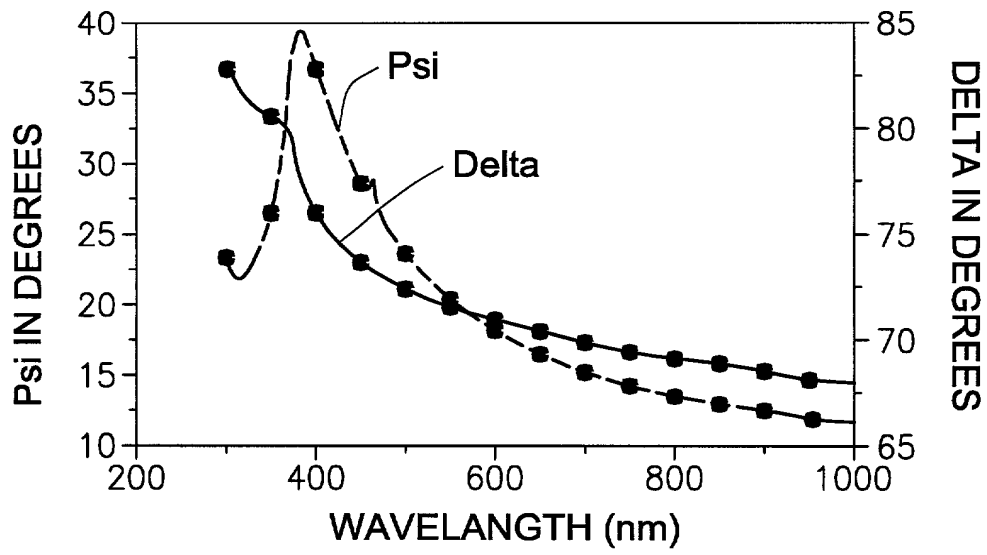


FIG. 7

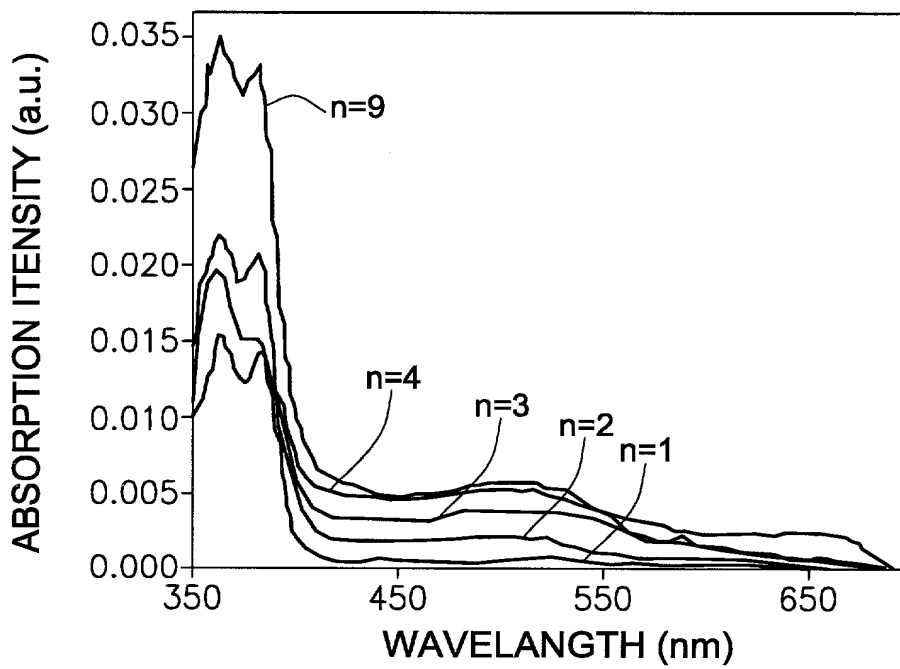


FIG. 8

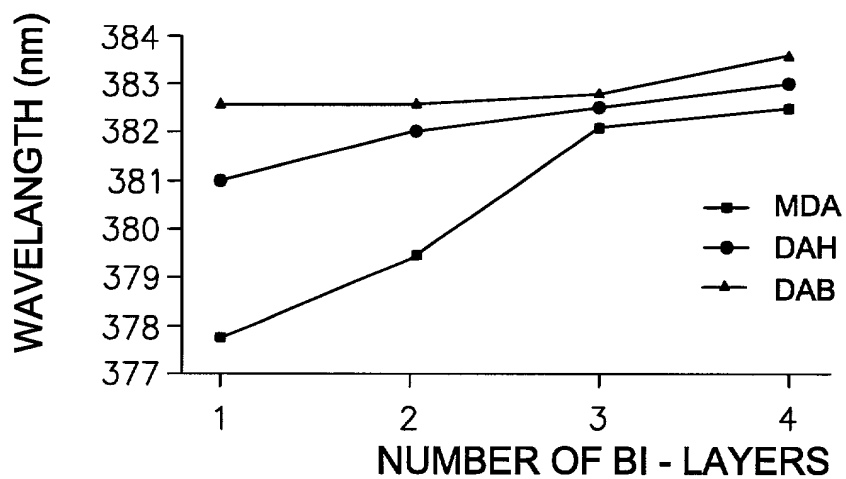


FIG. 9

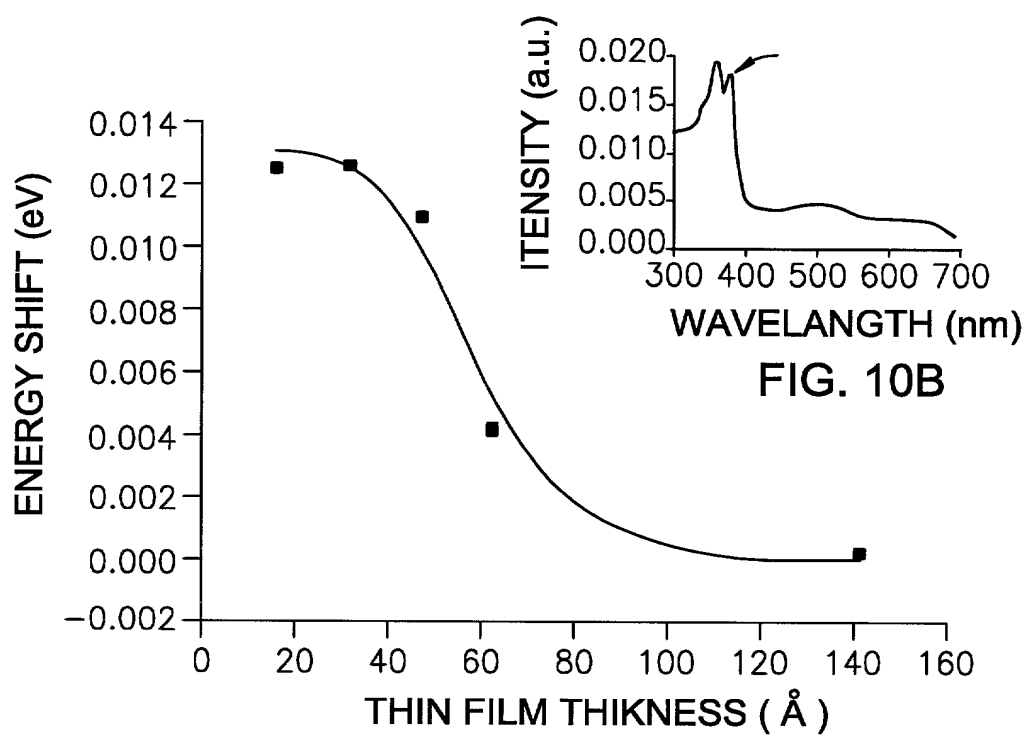


FIG. 10B

FIG. 10A

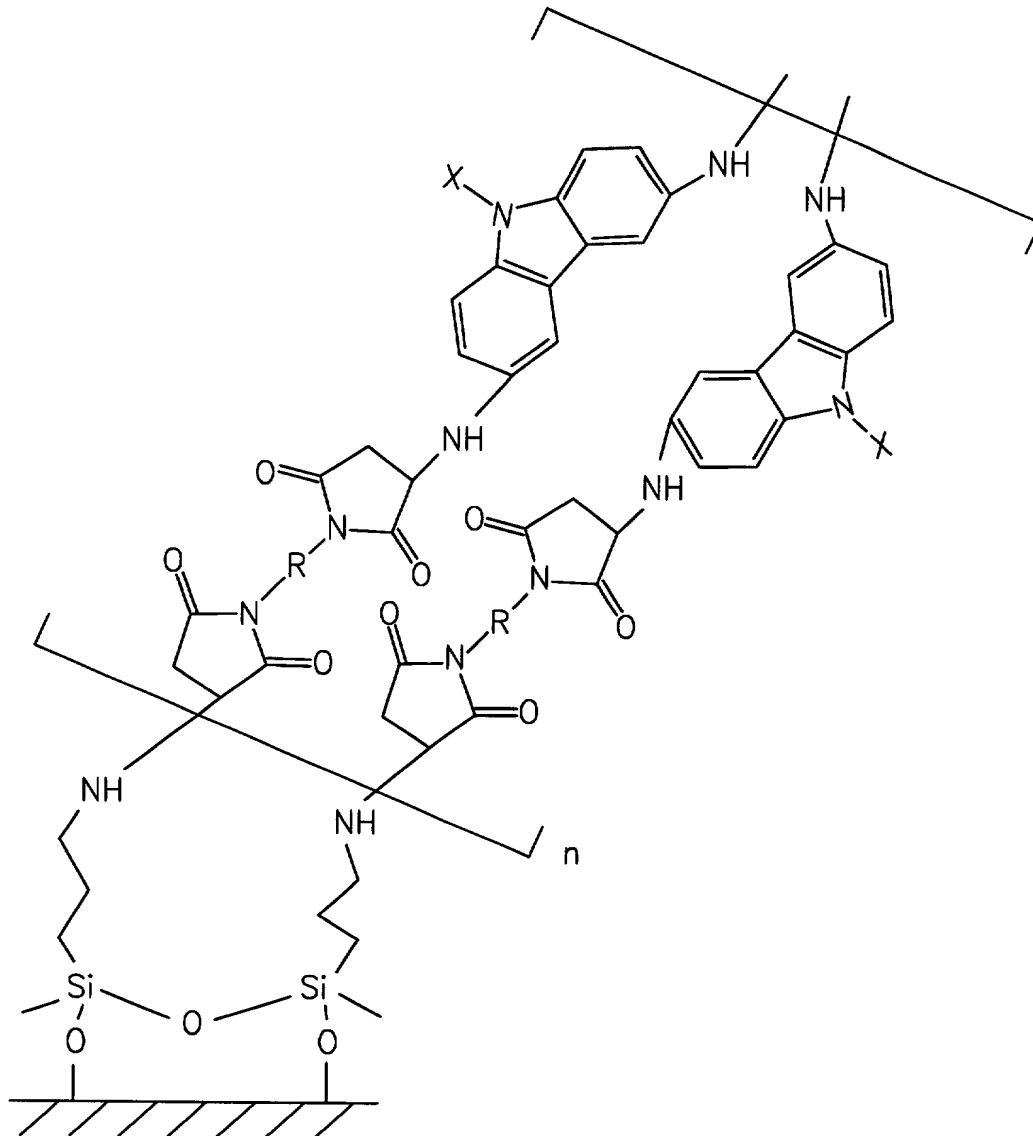


FIG. 11

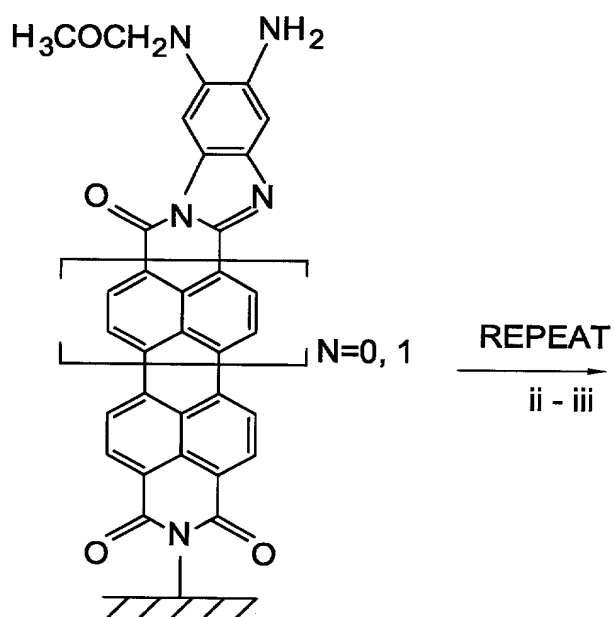
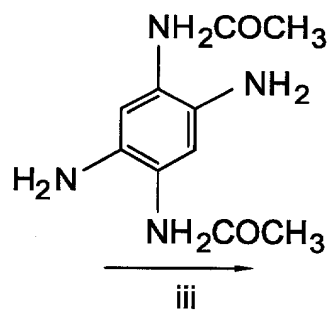


FIG. 12A

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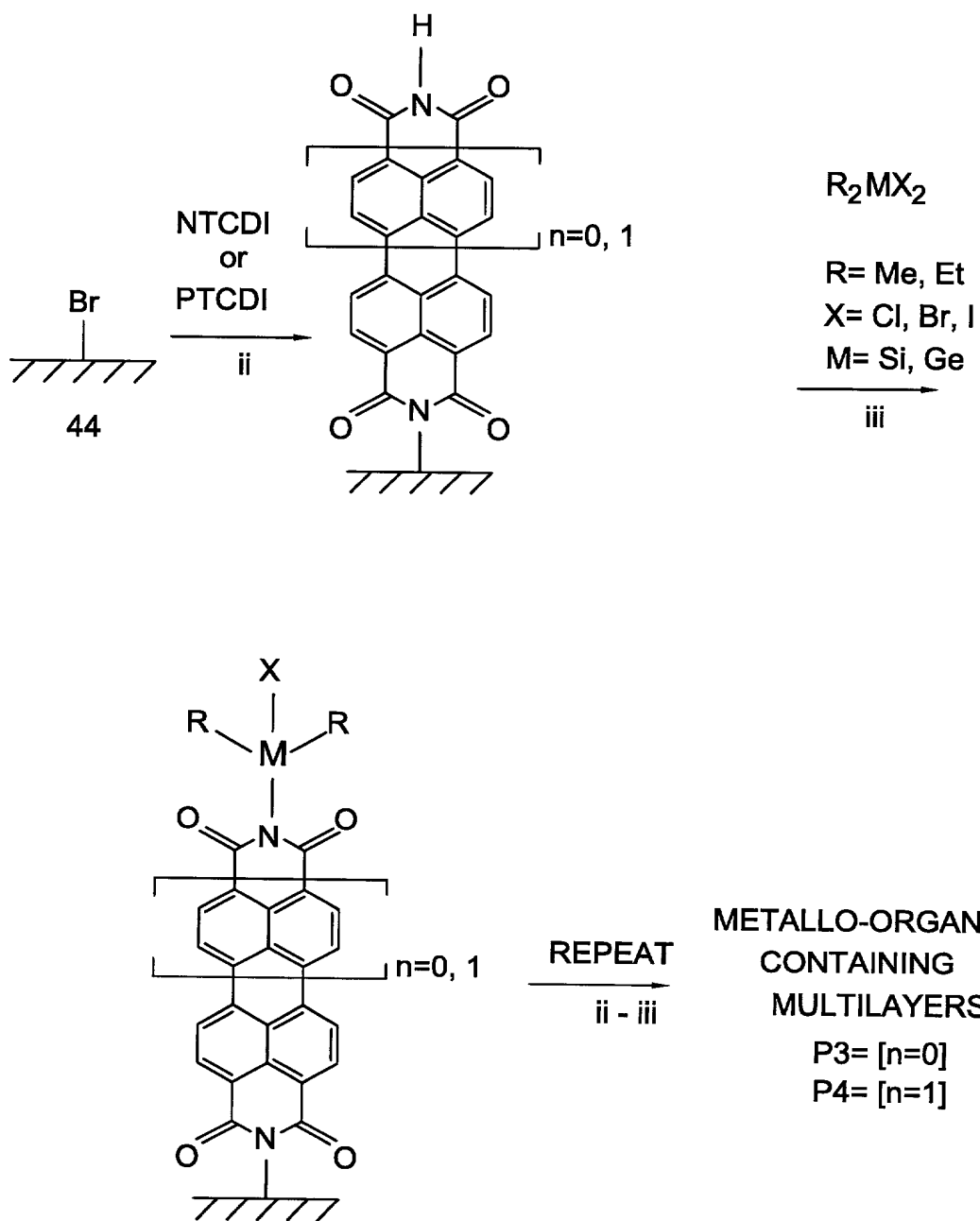


FIG. 12B

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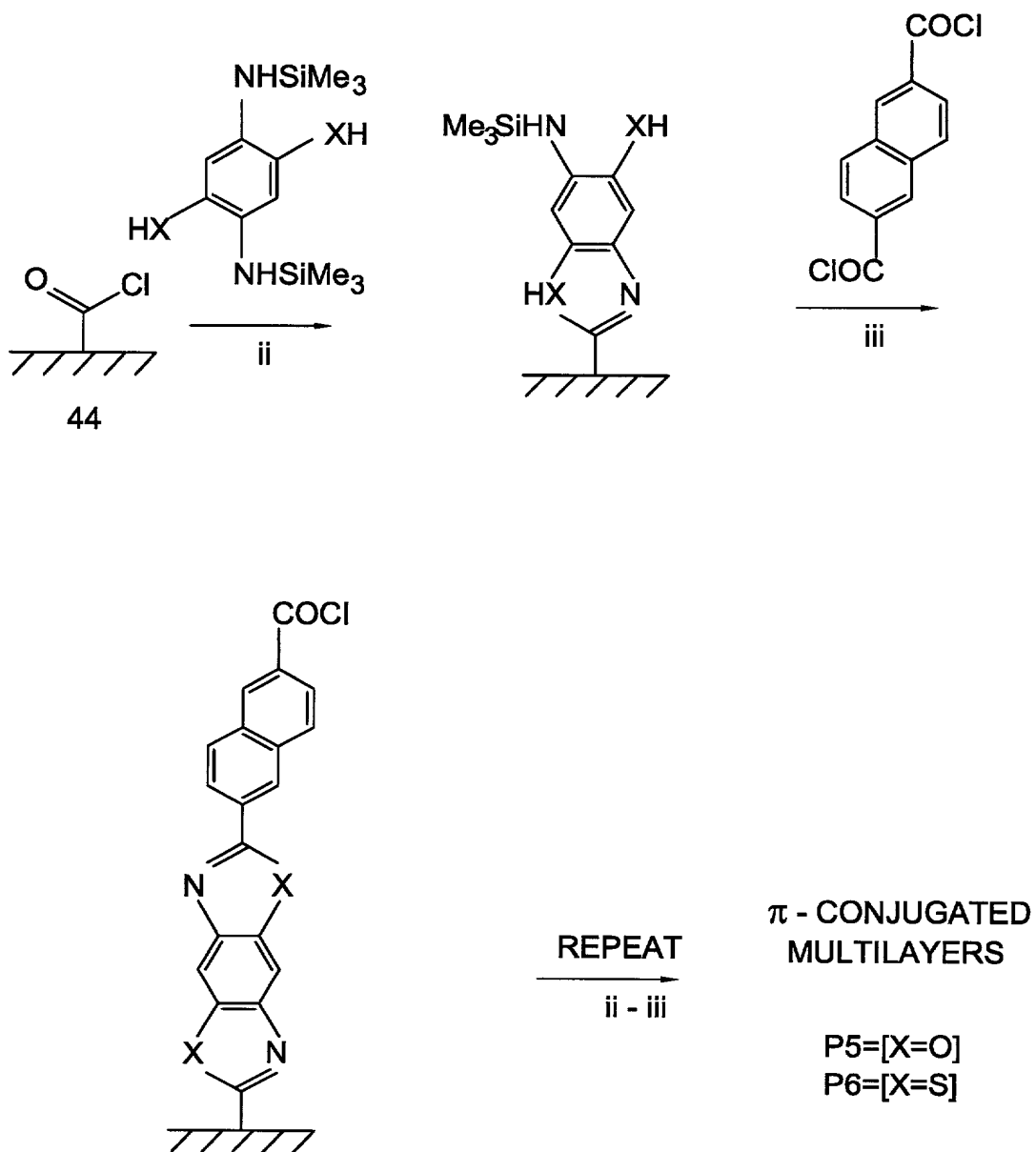


FIG. 12C

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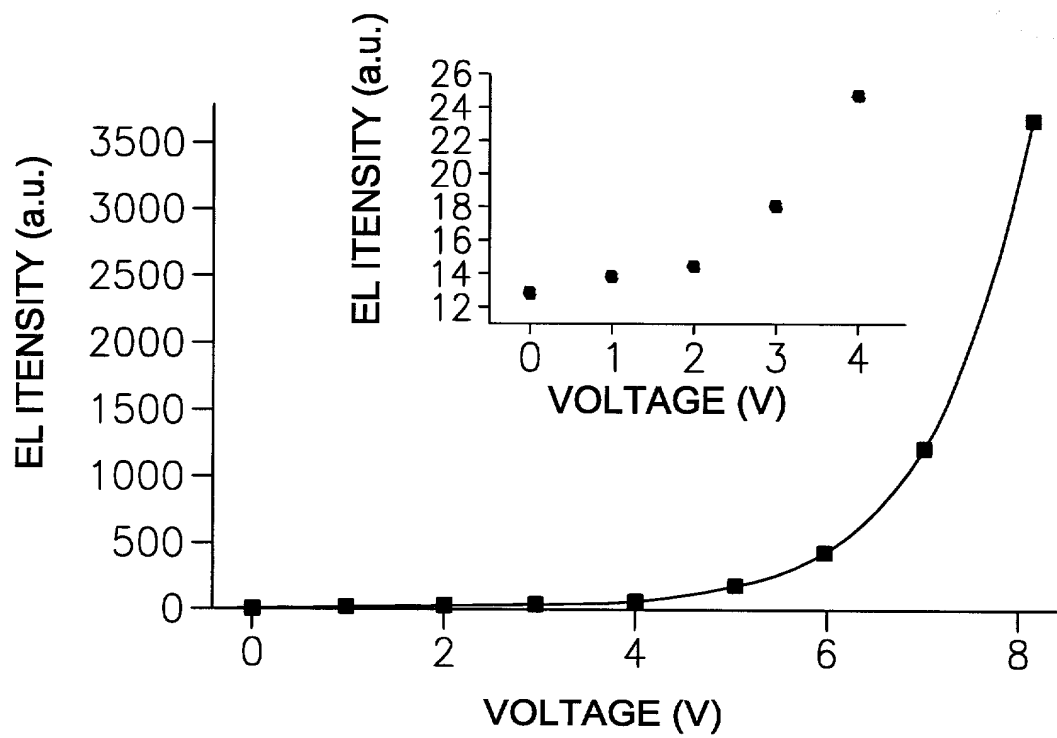


FIG. 13A

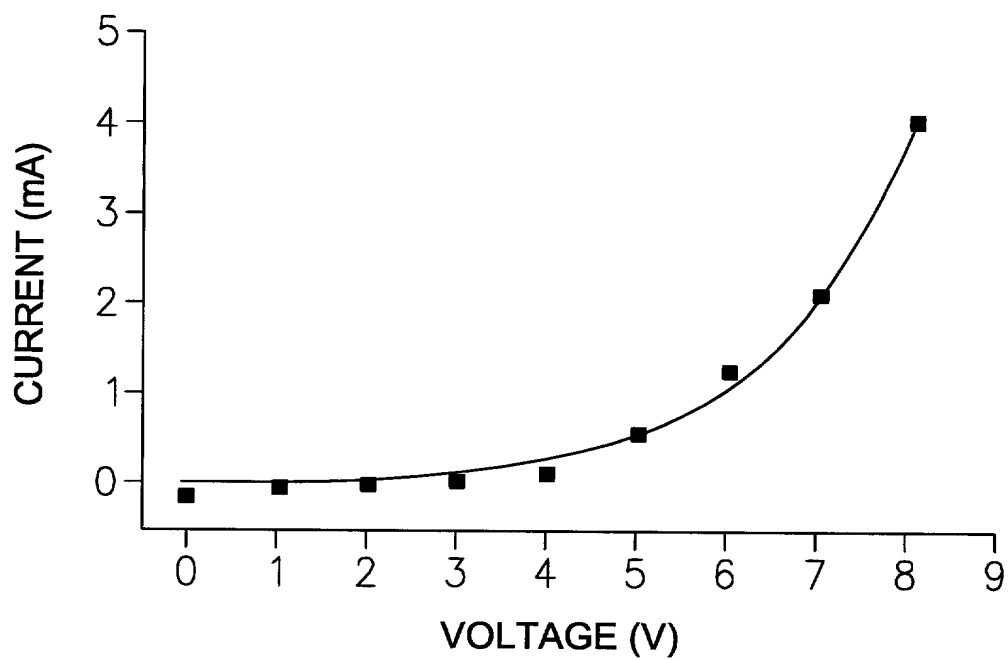


FIG. 13B

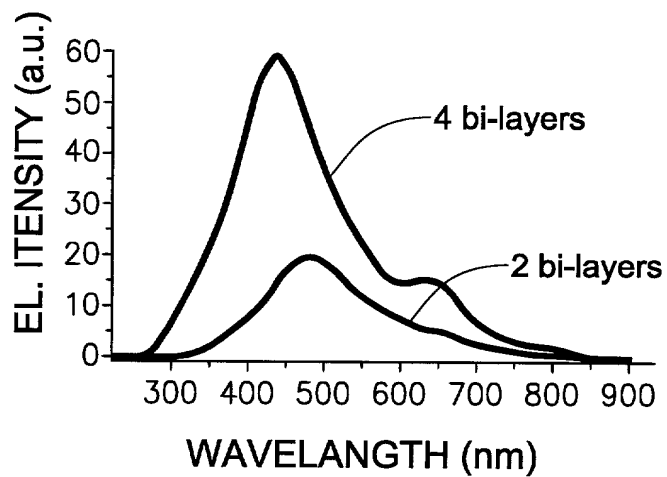


FIG. 14

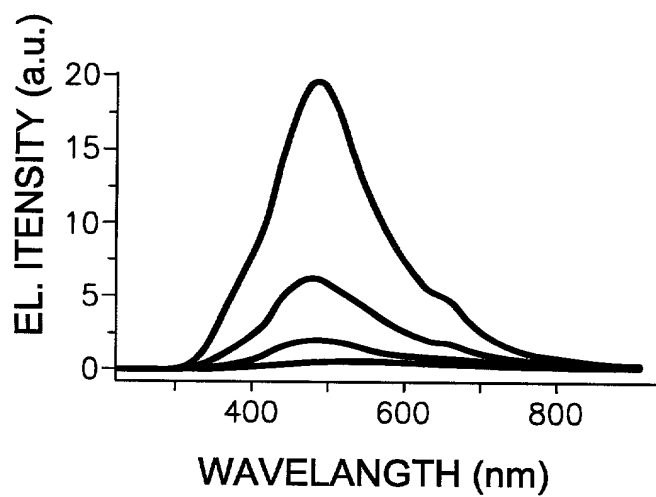


FIG. 15

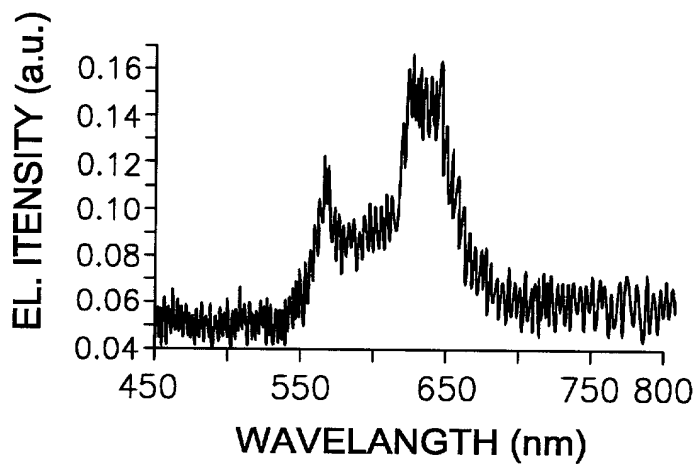


FIG. 16

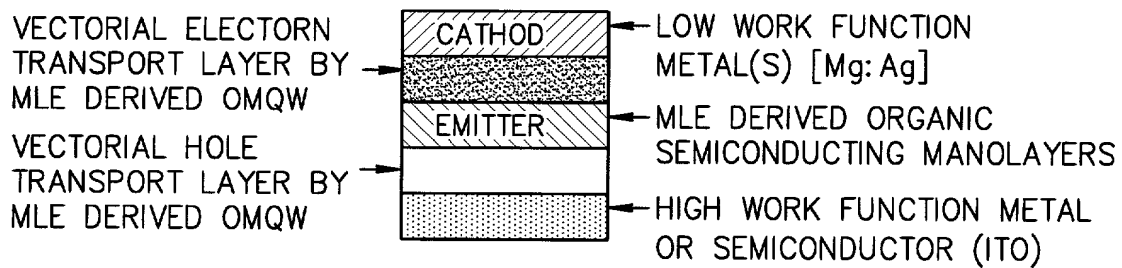


FIG. 17A

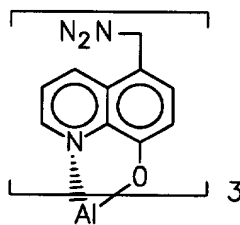


FIG. 17B

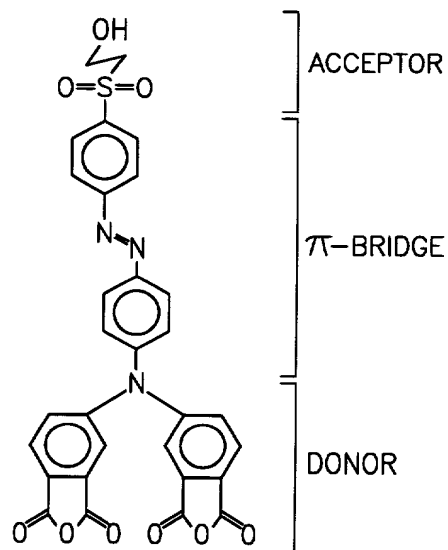


FIG. 18

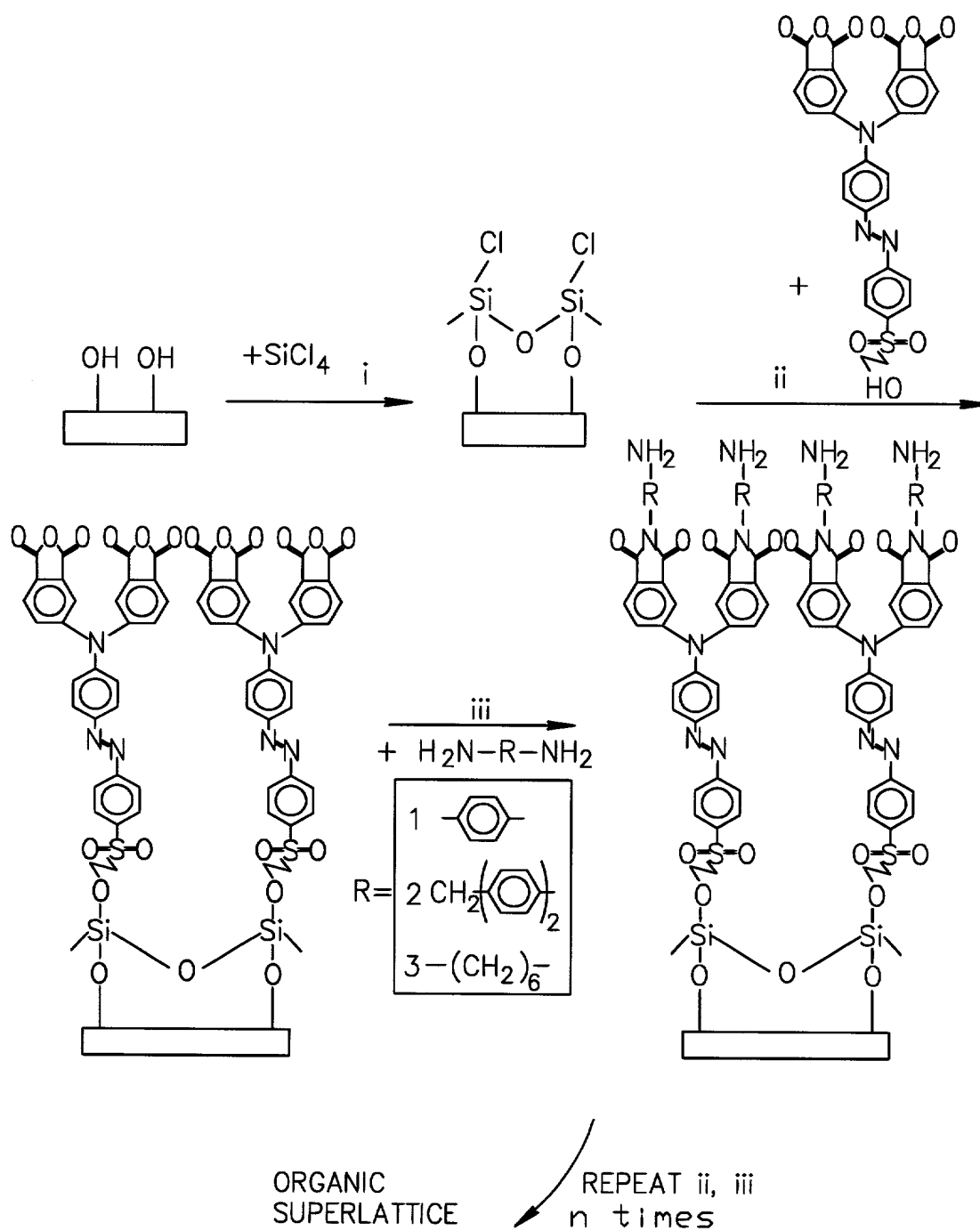


FIG. 19